



1-25206

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:)
Leo Gilles) Confirmation No. 7311
)
Serial No. 10/829,536) Group Art Unit 3683
)
Filed: April 22, 2004) Examiner Robert Siconolfi
)
For: DISC BRAKE) Attorney Docket 1-25206

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

APPELLANT'S BRIEF ON APPEAL PURSUANT TO 37 C.F.R. §41.37

Honorable Sir:

This Appeal Brief is in furtherance to the Notice of Appeal filed on November 14, 2005. The \$500.00 fee required under 37 C.F.R. § 41.20(b)(2) and any other necessary fees in connection with this brief are to be charged to Deposit Account No. 13-0005. A duplicate copy of this page is enclosed.

I. Real Party in Interest

The above-identified patent application is owned by Assignor, Lucas Automotive GmbH, a corporation organized under the laws of Germany and having its principal office at Koblenz, Germany.

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II. Related Appeals and Interferences

There are no other appeals or interferences that are known to appellant, the appellant's representative, or assignee which will directly affect, be directly affected by, or have a bearing on the Board's decision in this appeal.

III. Status of Claims

Claims 1 to 28 were finally rejected and all claims 1 to 28 are appealed.

IV. Status of Amendments

No amendments have been filed subsequent to the final rejection.

V. Summary of the Claimed Subject Matter

The present invention relates to a disc brake 10 having two brake shoes 12, 14, which, for generating a clamping force, are pressable against both sides of a brake disc 16, and an actuator device 26 for actuating at least one of the brake shoes. As is known in the art, the component of force introduced by the brake shoe into the brake disc at right angles to the plane of the brake disc is described as the clamping force. According to the present invention, at least one force transducer 42 is disposed in a first force transmission path C between the actuator device 26 and the at least one brake shoe and a maximum component of the force acting upon the force transducer upon generating of the clamping force is limited. In the embodiment illustrated in detail in Figs. 1 to 3, in the inoperative position illustrated in Fig. 1, there is a specific axial play between the diameter enlargement 56 of the piston 52 and the stop in the form of an inside diameter reduction 57 formed on the receiver 40. Thus, during braking, the maximum component of the force acting upon the force transducer 42 in the first force transmission path C upon generating of the clamping force is limited by taking up the play between the diameter enlargement 56 of the piston 52 and the stop 57 with the result that a second force transmission path D is activated that bypasses the force transducer 42. (See specification at page 10, line 24 to page 11, line 17). Also,

In the embodiment illustrated in Fig. 4, the maximum component of the force acting upon the force transducer 42 in the first force transmission path upon generating of the clamping force is limited by interaction of the carrier plate 18 of the brake shoe 12 with the ends of the annular mounting 44 and the receiver 40 facing the carrier plate 18 with the result that the second force transmission path D bypasses the piston 52 and hence the force transmission device 50. (See specification at page 13, lines 16-20 and page 13, line 27 to page 14, line 6). The claims in this appeal are directed to the embodiment of the disc brake shown in both of the above embodiments.

As specifically recited in Claim 1, the disc brake (first discussed on page 6, line 32, and identified by reference character 16 in connection with the embodiment shown in Fig. 1, and on page 13, line 1, and identified by reference character 10 in connection with the embodiment shown in Fig. 4) comprises:

a brake disc (first discussed on page 7, line 2, and identified by reference character 16 in both Figs. 1 and 4 embodiments) having two opposite sides;

two brake shoes (first discussed on page 7, line 1, and identified by reference characters 12 and 14 in both Figs. 1 and 4 embodiments), which for generating a clamping force (first discussed on page 7, line 6, and identified by reference characters A and A' in both Figs. 1 and 4 embodiments) are pressable against both sides of the brake disc;

an actuator device (first discussed on page 7, lines 10-11, and identified by reference character 26 in both Figs. 1 and 4 embodiments) for actuating at least one of the brake shoes; and

at least one force transducer (first discussed on page 8, line 5, and identified by reference character 42 in both Figs. 1 and 4 embodiments) disposed in a first force transmission path (first discussed on page 10, line 5, and identified by reference character C in both Figs. 1 and 4 embodiments) between the actuator device and at least one of the brake shoes, wherein a maximum component of force acting upon the force transducer upon generating of the clamping force is limited (e.g., in the embodiment shown in Fig. 1, the clamping force is limited by the diameter enlargement 56 of the piston 52 engaging the stop 57 as described on page 10, line 24

to page 11, line 3; and in the embodiment shown in Fig. 4, the clamping force is limited by the carrier plate 18 of the brake shoe 12 engaging the ends of the annular mounting 44 and the receiver 40 facing the carrier plate 18 as described on page 13, lines 16-20.

As specifically recited in Claim 8, between the actuator device and at least one of the brake shoes a second force transmission path is provided (first discussed on page 11, line 15, and identified by reference character D in both Figs. 1 and 4 embodiments), which bypasses the at least one force transducer the disc brake (e.g., in the embodiment shown in Fig. 1, the second force transmission path D bypasses the force transducer 42 as described on page 11, lines 11-19 and page 12, lines 5-10; and in the embodiment shown in Fig. 4, the second force transmission path D bypasses the force transmission device 50 and hence the force transducer 42 as described on page 13, line 31 to page 14, line 6).

As specifically recited in Claim 26, the disc brake (first discussed on page 6, line 32, and identified by reference character 16 in connection with the embodiment shown in Fig. 1, and on page 13, line 1, and identified by reference character 10 in connection with the embodiment shown in Fig. 4) comprises:

a brake disc (first discussed on page 7, line 2, and identified by reference character 16 in both Figs. 1 and 4 embodiments);

two brake shoes (first discussed on page 7, line 1, and identified by reference characters 12 and 14 in both Figs. 1 and 4 embodiments) pressable against the brake disc for generating a clamping force (first discussed on page 7, line 6, and identified by reference characters A and A' in both Figs. 1 and 4 embodiments);

an actuator (first discussed on page 7, lines 10-11, and identified by reference character 26 in both Figs. 1 and 4 embodiments) for actuating at least one of the brake shoes;

a force transducer (first discussed on page 8, line 5, and identified by reference character 42 in both Figs. 1 and 4 embodiments) arranged between the actuator and at least one of the brake shoes; and

a force limiting assembly (e.g., in the embodiment shown in Fig. 1, the force

limiting assembly is the outside diameter enlargement 56 of piston 52 engaging stop 57 as described on page 10, line 24 to page 11, line 3; and in the embodiment shown in Fig. 4, the force limiting assembly is the carrier plate 18 of the brake shoe 12 engaging the ends of the annular mounting 44 and the receiver 40 as described on page 13, lines 16-20).

As specifically recited in Claim 27, the disc brake (first discussed on page 6, line 32, and identified by reference character 16 in connection with the embodiment shown in Fig. 1, and on page 13, line 1, and identified by reference character 10 in connection with the embodiment shown in Fig. 4) comprises:

a brake disc (first discussed on page 7, line 2, and identified by reference character 16 in both Figs. 1 and 4 embodiments);

two brake shoes (first discussed on page 7, line 1, and identified by reference characters 12 and 14 in both Figs. 1 and 4 embodiments) pressable against the brake disc for generating a clamping force (first discussed on page 7, line 6, and identified by reference characters A and A' in both Figs. 1 and 4 embodiments);

an actuator (first discussed on page 7, lines 10-11, and identified by reference character 26 in both Figs. 1 and 4 embodiments) for actuating at least one of the brake shoes;

a first force transmission path (first discussed on page 10, line 14, and identified by reference character C in both Figs. 1 and 4 embodiments) arranged between the actuator and at least one of the brake shoes;

a force sensing element (first discussed on page 8, line 5, and identified by reference character 42 in both Figs. 1 and 4 embodiments) disposed in the first force transmission path; and

a second force transmission path (first discussed on page 11, line 15, and identified by reference character D in both Figs. 1 and 4 embodiments) arranged between the actuator and at least one of the brake shoes, the second force transmission path bypassing the force sensing element (e.g., in the embodiment shown in Fig. 1, the second force transmission path D bypasses the force sensing element 42 as described on page 11, lines 11-19 and page 12, lines 5-10; and in the embodiment shown in Fig.

4, the second force transmission path D bypasses the force transmission device 50 and hence the force sensing element 42 as described on page 13, line 31 to page 14, line 6).

VI. Grounds of Rejection to be Reviewed on Appeal

- A. The grounds of rejection were set forth in the Final Office Action dated July 14, 2005, as follows:

1. Claims 1-3 and 7-28 were rejected under 35 U.S.C. 102(b) as being anticipated by WO 99/37939.

VII. Arguments of Patentability

- A. Rejection Under 35 U.S.C. 102(b) Over WO 99/37939

1. Each Independent Claim Recites a Novel and Patentable Invention.

- a. Claims 1-3 and 7-25

The rejection under 35 U.S.C. 102(b) of Claims 1-3 and 7-25 cannot be sustained because WO 99/37939 fails to disclose that the disc brake includes at least one force transducer (42) disposed in a first force transmission path (C) between the actuator device and at least one of the brake shoes, wherein a *maximum component of force acting upon the force transducer upon generating of the clamping force is limited*, as recited in independent Claim 1. (Emphasis added)

The Examiner's conclusions on pages 2 and 3 in the Final Office Action do not represent a fair interpretation of the actual teaching in cited reference WO 99/37939. Rather than assessing what cited reference WO 99/37939 actually teaches, the Examiner appears to make a number of unfounded assumptions about how the disc brake disclosed in reference WO 99/37939 supposedly operates, and those assumptions have clearly been drawn in light of the present invention.

The arrangement in prior art reference WO 99/37939 is basically concerned with providing a disc brake actuator in which the "problems

relating to transverse or radial loadings are circumvented or at least alleviated." (See WO 99/37939 at page 1, lines 27-28). The prior art arrangement solves this problem by providing a "resilient intermediate pressure means" provided between a force-generating screw mechanism and the brake actuation member. (See WO 99/37939 at page 1, lines 28-29).

Importantly, regarding the stiffness of this "resilient intermediate pressure means", cited reference WO 99/37939 explicitly states at page 1, line 31 to page 2, line 2:

"Thus, its stiffness in axial direction should be rather high. In particular, the (axial) stiffness should be maintained at a level where the required force/displacement relationship still provides the possibility to obtain the desired actuation force."

The significant feature of the "resilient intermediate pressure means" as far as the teaching of cited reference WO 99/ 37939 is concerned is stated at page 2, lines 5-9. Namely, that:

"...extreme loadings, which have a certain transverse component or bending moment, are not directly or fully transmitted towards the screw mechanism. The resilient aspect of the force transmission between screw mechanism and actuating member makes these transverse or bending loadings less severe or even absent."

Thus, in cited reference WO 99/37939, the *resilient* aspect of the "intermediate pressure means" between the screw mechanism and the actuating member is designed to make any transverse or bending loadings less severe or even absent. (See WO 99/37939 at page 2, lines 7-9).

In the embodiment of cited reference WO 99/37939 considered relevant to the present invention (Fig. 3), the "intermediate pressure

means" comprises a hydraulic pressure pad (36) having two parallel walls (41, Fig. 2) connected at their circumference (42) and enclosing an internal space filled with a hydraulic fluid (43). This hydraulic fluid also fills a channel (51) in communication with the internal space of the pressure pad (36), with the hydraulic fluid acting upon a load measuring device (50).

The liquid-filled pressure pad (36) thereby operates to provide an even distribution of the axial actuation force to the actuating piston (35), even though the nut (39) of the screw mechanism (10) may not be in perfect parallel alignment with the piston (35). That is, the pressure pad (36) is able to compensate for any such misalignment or transverse loadings.

However, the specification of WO 99/37939 clearly states at page 1, line 31 to page 2, line 2 that the axial stiffness of the pressure pad should be sufficiently high to obtain the desired actuating force - and this would of course be expected from a hydraulic member, as hydraulic elements are essentially incompressible.

There is absolutely no hint, teaching or suggestion in cited reference WO 99/37939 that the hydraulic pressure pad (36) is designed to deform so that only a *limited* axial force is transmitted by the pad (36). Limiting the axial force in the device of cited reference WO 99/37939 would be contrary to its teachings and make no sense because this would give a wrong measurement result (note that cited reference WO 99/37939 does not mention that the force sensor (50) has to be protected from too high a load). The Examiner has drawn this false conclusion merely because it suits his *ex post facto* analysis of this prior art reference. Furthermore, if the liquid-filled pressure pad (36) *did* compress such that the nut (39) would strike against the ends of the grooves (39'), the pad (36) would no longer function to compensate for misalignment of the nut (39) or transverse loadings. Rather, any

undesirable transverse loadings would then be applied directly to the piston (35).

Thus, the main issue in the present case is that in cited reference WO 99/37939 the hydraulic fluid filling the pressure pad (36) and communicating with the force sensor (50) will not undergo any significant axial compression, and will thereby enable the actuating force to be transmitted through the hydraulic pressure pad (36) to the actuating piston (35).

Not only is the specification of cited reference WO 99/37939 silent with this respect to any supposed deformation of the pressure pad (36), it actually teaches the contrary - i.e., it teaches that the “intermediate pressure means” is *axially stiff* in order to ensure good transmission of the desired actuating force.

Moreover, the Examiner states that in the Final Office Action in paragraph 5:

“The pressure pad clearly will compress and once the end of the groove is reached, no additional force will be applied because it will reach the maximum amount of compression and therefore, the maximum force is limited.”

However, there is also no disclosure, teaching or suggestion in cited reference WO 99/37939 that the walls (41) of the pressure pad (36) deform to enable the nut (39) of the screw mechanism (10) to reach the end of the grooves (39’), as alleged by the Examiner. As the hydraulic fluid itself is essentially incompressible, a deformation of the walls (41) of the pressure pad (36) would be necessary to effect any axial compression of the pressure pad (36), but such deformation is *not disclosed* in cited reference WO 99/37939.

The Examiner states in the Advisory Action dated November 2, 2005 that: “*Axially stiff does not mean the pad will not compress significantly but rather it take a significant amount of force.*” The point

is, however, that an axial compression of the pressure pad (36) is not apparent from cited reference WO 99/37939. As further explained in the request for reconsideration on page 9, first paragraph and continuing to the paragraph bridging pages 9 and 10, the main issue in the present case is that, in WO 99/37939, the hydraulic fluid that fills the pressure pad (36) and communicates with the force sensor (50) does not undergo any significant axial compression. Accordingly, the actuating force is transmitted to the actuating piston (35) through the hydraulic pressure pad (36). Not only is the specification of WO 99/37939 silent with this respect to any supposed deformation of the pressure pad (36), it actually teaches the contrary - i.e., it teaches that the “intermediate pressure means” is axially stiff in order to ensure good transmission of the actuating force. There is no disclosure, teaching or suggestion in WO 99/37939 that the pressure pad (36) deforms to enable the nut (39) of the screw mechanism (10) to reach the end of the grooves (39'), which then function as a “stop”, as alleged by the Examiner.

Further, in the November 2, 2005 Advisory Action, the Examiner states that the *“applicant does not explain how fluid pressure is transmitted to the sensor if the pad does not undergo axial compression. The sensor and pressure pad is a closed system and pressure increases as volume decreases. The only way to change the volume is for the pad to compress. No disclosure is made because it is impossible for the device to work without compression as one of ordinary skill in the art would understand.”* Again, the Examiner’s logic is confused. The pressure in the hydraulic fluid increases as the force applied by the nut and screw mechanism increases, but with negligible change in fluid volume. That is, although a minuscule compression may occur in the hydraulic fluid, the compression is essentially insignificant. The outer walls (41) of the pressure pad (36) permit transmission of the force from the nut (39) to the hydraulic fluid, and the hydraulic fluid transmits the

pressure to the load measuring device (50). However, this does not mean that there is any significant reduction in volume of the pressure pad (36). As the Examiner notes, the system is ‘closed’, so the hydraulic fluid does not flow anywhere. The Examiner’s incorrect understanding that there is, or must be, a significant volume decrease in the pressure pad is a key factor that has led to the clearly erroneous rejection of the claims based on the disclosure of WO 99/37939. The pressure pad (36) does not compress such that the nut (39) travels to the end of the grooves (39’) since the hydraulic pressure pad (36) is effectively incompressible.

Therefore, a person of ordinary skill in the art would not conclude that cited reference WO 99/37939 teaches a means for limiting a maximum component of force acting upon the force transducer during the generation of the brake disk clamping force. Accordingly, WO 99/37939 does not disclose a disc brake including at least one force transducer (42) disposed in a first force transmission path (C) between the actuator device and at least one of the brake shoes, *wherein a maximum component of force acting upon the force transducer upon generating of the clamping force is limited*, as recited in independent Claim 1. (Emphasis added) Accordingly, for the reasons discussed above, the rejection under 35 U.S.C. 102(b) of Claims 1-3 and 7-25 cannot be sustained in view of the disclosure in WO 99/37939.

b. Claim 26

The rejection under 35 U.S.C. 102(b) of Claim 26 cannot be sustained because WO 99/37939 fails to disclose that the disc brake includes a *force limiting assembly for limiting the force acting upon the force transducer upon generation of the clamping force*, as recited in independent Claim 26. (Emphasis added)

Claim 26 contains generally the same subject matter recited above in Claim 1 and further specifically recites that the disc brake includes a

force limiting assembly for limiting the force acting upon the force transducer upon generation of the clamping force. (Emphasis added) Thus, the entire above discussion in connection with Claim 1 as to what cited reference WO 99/37939 does not disclose is incorporated herein in entirety with respect to Claim 26. Summarizing, it is clear that WO 99/37939 does not include any teaching or suggestion that the force acting on the force sensor device (50) is limited in any way. To the contrary, limiting the force would falsify the measuring result of the force sensor device (50) in higher force regions. It would have to be expected that if the ends of the grooves (39') could ever be reached and if in such situations the force would actually be limited, a corresponding remark could have been found in cited reference WO 99/37939. The absence of such a remark is clear evidence of the inadmissible hindsight applied by the Examiner. Accordingly, for these reasons, the rejection under 35 U.S.C. 102(b) of Claim 26 cannot be sustained in view of the disclosure in WO 99/37939.

c. Claims 27 and 28

The rejection under 35 U.S.C. 102(b) of Claims 27 and 28 cannot be sustained because WO 99/37939 fails to disclose that the disc brake includes a *second force transmission path* arranged between the actuator and at least one of the brake shoes, the *second force transmission path bypassing the force sensing element*, as recited in independent Claim 27. (Emphasis added)

Claim 27 contains generally the same subject matter recited above in Claim 1 and further specifically recites that the disc brake includes a *first force transmission path* arranged between the actuator and at least one of the brake shoes; a *force sensing element disposed in the first force transmission path*; and a *second force transmission path* arranged between the actuator and at least one of the brake shoes, *the second*

force transmission path bypassing the force sensing element. (Emphasis added). Thus, the entire above discussion in connection with Claim 1 as to what cited reference WO 99/37939 does not disclose is incorporated herein in entirety with respect to Claim 1. Summarizing, it is clear that WO 99/37939 does not include any teaching or suggestion that the force acting on the force sensor device (50) is limited in any way. To the contrary, limiting the force would falsify the measuring result of the force sensor device (50) in higher force regions. It would have to be expected that if the ends of the grooves (39') could ever be reached and if in such situations the force would actually be limited, a corresponding remark could have been found in cited reference WO 99/37939. The absence of such a remark is clear evidence of the inadmissible hindsight applied by the Examiner. Further, the Examiner has *never* specifically pointed out where WO 99/37939 discloses a *second force transmission path* arranged between the actuator and at least one of the brake shoes, *the second force transmission path bypassing the force sensing element*. Thus, WO 99/37939 clearly does not disclose a *force sensing element disposed in the first force transmission path; and a second force transmission path* arranged between the actuator and at least one of the brake shoes, *the second force transmission path bypassing the force sensing element*, as recited in Claim 27. (Emphasis added). Accordingly, for these reasons, the rejection under 35 U.S.C. 102(b) of Claims 27 and 28 cannot be sustained in view of the disclosure in WO 99/37939.

2. The Following Dependent Claims are Separately Patentable.

a. Claims 8-13

The rejection under 35 U.S.C. 102(b) of Claims 8-13 cannot be sustained because WO 99/37939 fails to disclose that wherein between the actuator device and at least one of the brake shoes a *second force*

transmission path (D) is provided, which bypasses the at least one force transducer (42), as recited in dependent Claim 8. (Emphasis added)

Claim 8 depends from Claim 2 which depends from Claim 1 and further specifically recites that between the actuator device and at least one of the brake shoes a *second force transmission path is provided, which bypasses the at least one force transducer.* (Emphasis added). Thus, the entire above discussion in connection with Claim 1 as to what cited reference WO 99/37939 does not disclose is incorporated herein in entirety with respect to Claim 1. Summarizing, it is clear that WO 99/37939 does not include any teaching or suggestion that the force acting on the force sensor device (50) is limited in any way. To the contrary, limiting the force would falsify the measuring result of the force sensor device (50) in higher force regions. It would have to be expected that if the ends of the grooves (39') could ever be reached and if in such situations the force would actually be limited, a corresponding remark could have been found in cited reference WO 99/37939. The absence of such a remark is clear evidence of the inadmissible hindsight applied by the Examiner. Further, the Examiner has *never* specifically pointed out where WO 99/37939 discloses a *second force transmission path provided* between the actuator device and at least one of the brake shoes which *bypasses the force sensing element.* Thus, WO 99/37939 clearly does not disclose wherein between the actuator device and at least one of the brake shoes a *second force transmission path is provided, which bypasses the at least one force transducer,* as recited in Claim 8. (Emphasis added). Accordingly, for these reasons, the rejection under 35 U.S.C. 102(b) of Claims 8-13 cannot be sustained in view of the disclosure in WO 99/37939.

Conclusion

In view of the above remarks, Appellant has shown that the claims are in proper

form for allowance, and the invention, as defined in the claims herein, is neither disclosed nor suggested by the references of record. In view of the foregoing arguments, the rejections of the claims 1 to 28 are in error, and should be reversed. Appellant accordingly respectfully requests that the Board of Patent Appeals and Interferences reverse the Examiner as to all rejections.

Respectfully submitted.



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VIII. Claims Appendix

1. A disc brake comprising:
 - a brake disc having two opposite sides;
 - two brake shoes, which for generating a clamping force are pressable against both sides of the brake disc;
 - an actuator device for actuating at least one of the brake shoes; and
 - at least one force transducer disposed in a first force transmission path between the actuator device and at least one of the brake shoes, wherein a maximum component of force acting upon the force transducer upon generating of the clamping force is limited.
2. The disc brake according to claim 1,
wherein a force transmission device is disposed between the at least one force transducer and the at least one brake shoe.
3. The disc brake according to claim 2,
wherein the force transmission device interacts via a two-dimensional section with the at least one force transducer.
4. The disc brake according to claim 1,
wherein the at least one force transducer is designed as a force-to-resistance transducer.
5. The disc brake according to claim 1,
wherein the at least one force transducer comprises a force-to-pressure transducer and a pressure-to-resistance transducer disposed functionally downstream of the force-to-pressure transducer.

6. The disc brake according to claim 5,
wherein the pressure-to-resistance transducer is manufactured by single-chip technology.
7. The disc brake according to claim 2,
wherein the at least one force transducer has a chamber, which is filled with a fluid and sealed by a diaphragm, which interacts with the force transmission device.
8. The disc brake according to claim 2,
wherein between the actuator device and at least one of the brake shoes a second force transmission path is provided, which bypasses the at least one force transducer.
9. The disc brake according to claim 8,
wherein the second force transmission path is activated when a force threshold value is exceeded.
10. The disc brake according to claim 9,
wherein at least the forces exceeding the force threshold value are transmissible via the second force transmission path.
11. The disc brake according to claim 8,
wherein the force transmission device is disposed at least in sections both in the first force transmission path and in the second force transmission path.
12. The disc brake according to claim 8,
wherein the force transmission device has control elements for activating the second force transmission path.

13. The disc brake according to claim 12,
wherein the control elements for activating the second force transmission path
are formed by a first stop of the force transmission device, which first stop
interacts with a second stop, which is coupled in a force transmission direction
rigidly to a component of the actuator device.
14. The disc brake according to claim 2,
wherein the force transmission device comprises a piston movable relative to
the at least one force transducer.
15. The disc brake according to claim 2,
wherein the force transmission device comprises an elastic reaction element
movable relative to the at least one force transducer.
16. The disc brake according to claim 15,
wherein the reaction element is disposed in the first force transmission path
between a moveable piston and the at least one force transducer.
17. The disc brake according to claim 2,
wherein the actuator device has a receiver for the at least one force transducer.
18. The disc brake according to claim 17,
wherein the receiver for the at least one force transducer has a guide for the
force transmission device.
19. The disc brake according to claim 18,
wherein the guide for the force transmission device has at least one recess for
receiving in sections an elastic reaction element in the event of its elastic
deformation.

20. The disc brake according to claim 17,
wherein the actuator device comprises an at least translationally movable
actuator element, which is coupled in a force transmission direction rigidly to
the receiver.
21. The disc brake according to claim 20,
wherein the translationally movable actuator element has a hollow space, into
which the receiver extends at least in sections.
22. The disc brake according to claim 1,
wherein the actuator device comprises a nut/spindle arrangement.
23. The disc brake according to claim 22,
wherein a translationally movable actuator element is a component of the
nut/spindle arrangement or is coupled rigidly to a component of the nut/spindle
arrangement.
24. The disc brake according to claim 1,
wherein the actuator device converts a driving motion of a motor into an
actuating motion for actuating at least one of the brake shoes.
25. The disc brake according to claim 1,
wherein the actuator device is hydraulically actuatable.

26. A disc brake comprising:
 - a brake disc;
 - two brake shoes pressable against the brake disc for generating a clamping force;
 - an actuator for actuating at least one of the brake shoes;
 - a force transducer arranged between the actuator and at least one of the brake shoes; and
 - a force limiting assembly for limiting the force acting upon the force transducer upon generation of the clamping force.
27. A disc brake comprising:
 - a brake disc;
 - two brake shoes pressable against the brake disc for generating a clamping force;
 - an actuator for actuating at least one of the brake shoes;
 - a first force transmission path arranged between the actuator and at least one of the brake shoes;
 - a force sensing element disposed in the first force transmission path; and
 - a second force transmission path arranged between the actuator and at least one of the brake shoes, the second force transmission path bypassing the force sensing element.
28. The disc brake of claim 27,
further comprising an activating assembly for activating the second force transmission path when a predefined force threshold value is exceeded.

IX. Evidence Appendix

There is no outside evidence.

X. Related Proceedings Appendix

There are no related proceedings.